Potential Benefits from RSM Demonstration Projects

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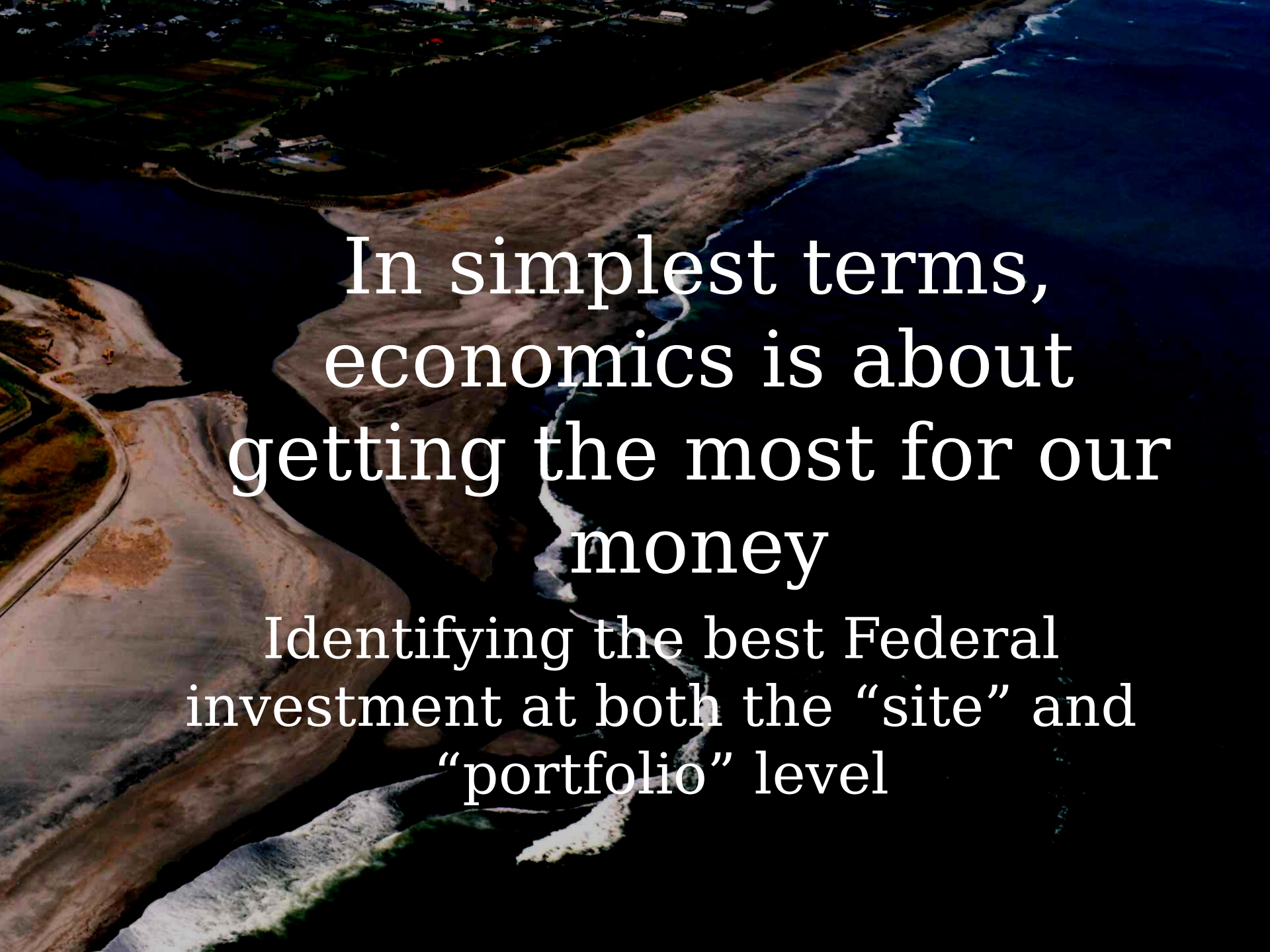


In simplest terms, economics is about getting the most for our money

Identifying the best Federal investment at both the “site” and “portfolio” level

US Army Corps of Engineers

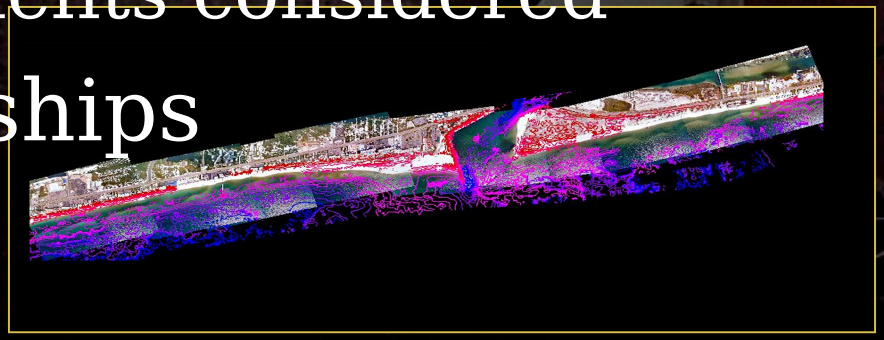
USACE Environmental Operating Principles

Scarcity is the fundamental Economic problem

We can’t afford to return all sand to the system at once, so where are the best opportunities?

RSM benefits come from….

- Better information
- Better technology
- A broader view of wise sand management
  - Systems approach
  - More types of benefits considered
- Stronger partnerships



Economic Framework – Status Quo

- **“Old” approach only considers least cost means of delivering navigation benefits**
  - **Each site treated independently, rather than in a system**
  - **May miss opportunities to more wisely manage sand resource**

Economic Framework - RSM

- RSM considers other effects of the activity on “two tracks”:
  - Cost Savings - Production Efficiencies
    - Dredging cost savings – across places or time
    - Nourishment savings
  - Wise Management of Sand Resources in various
    - Off-site benefits – categories
    - Sand as a valued resource/commodity
    - Effects through time

Six Step Planning Process & RSM

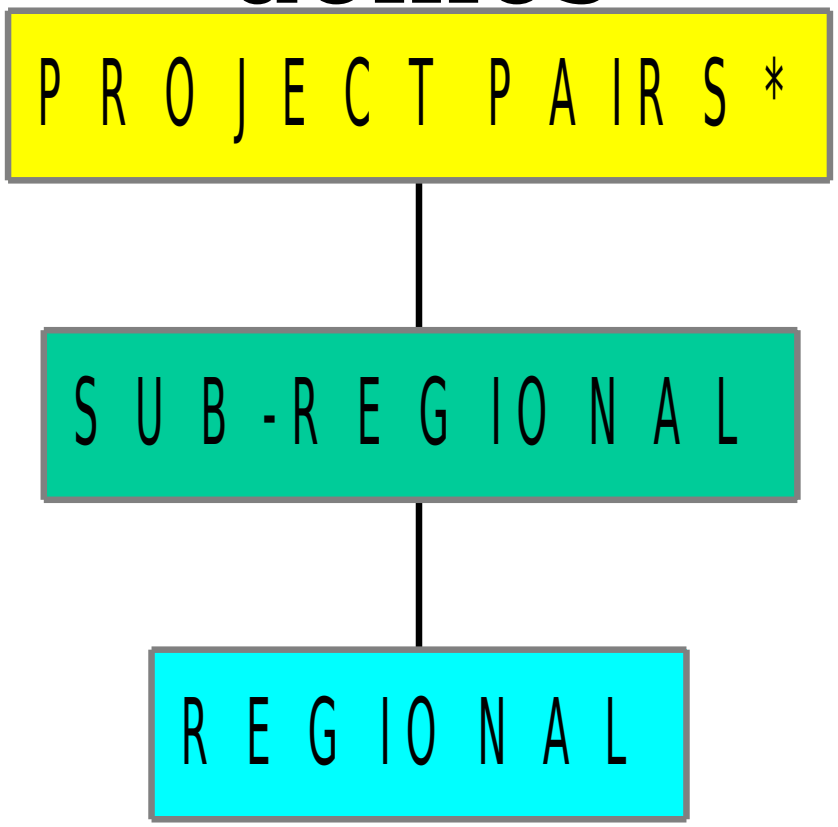
- **Specify Problems and Opportunities**
  - Expanding the scope of problems and opportunities beyond navigation to other resource categories, across space and time
- **Inventory and Forecast Conditions**
  - Need data for categories of interest, such as inventories of buildings and development, or significant environmental resources
- **Formulate Alternative Plans**
  - Important to assess efficiencies of approaches – consider different methods and scales for approaching the problems
- **Evaluate Effects of Alternative Plans**
  - Measurement may be difficult – distinguishing between with and without project conditions, where sand is, and what it impacts (incrementally)
- **Compare Alternative Plans**
  - Must have good measurement to distinguish between plans
- **Select Recommended Plan**
  - Criteria will differ depending on authorities, partnerships, broader "watershed" plans

Matrix for beneficial effects

- Costs*
- Revenues
- Benefits

- Short term*
- Long term

Sequence for expanding extent of “regional” in the demos



RSM effects can be considered under the four accounts (P & G)

- **NED**
  - **National Economic Development**
    - **Measures real change in overall wealth to the nation**
- **RED**
  - **Regional Economic Development**
    - **Measures distribution of wealth, typically as jobs and income**
- **EQ**
  - **Environmental Quality**
    - **Usually non-monetary measures – quality and quantity**
- **OSE**
  - **Other Social Effects**
    - **Life, health, safety**

- **NED**
  - Storm damage reduction
    - Commercial, residential structures
    - Undeveloped land
    - Infrastructure
  - Recreation
    - Domestic
    - International
  - Navigation
    - Reduced operations and maintenance outlays

- **RED**
  - Income, Employment
  - Tax receipts

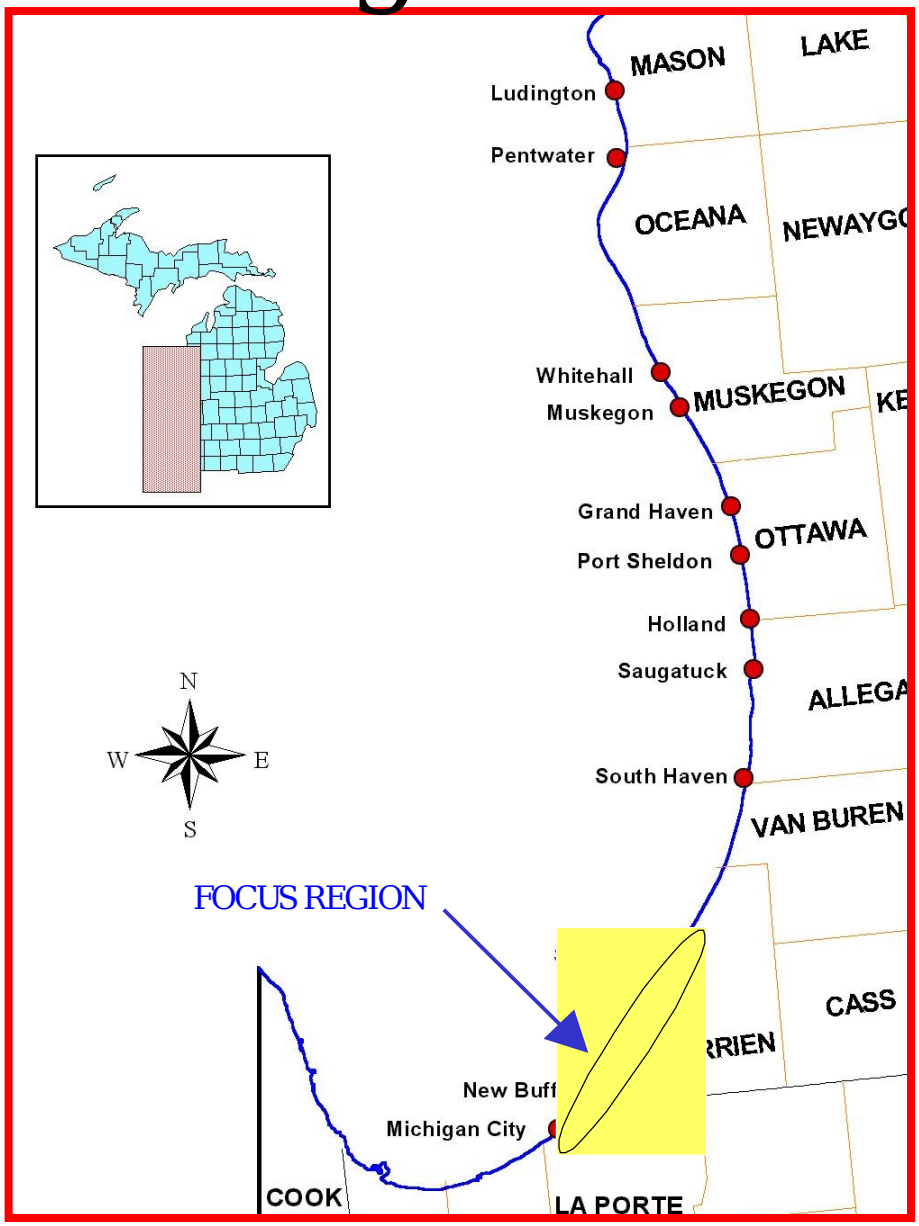
- **EQ**
  - Ecosystem restoration
    - Beach habitats, dunes, freshwater wetlands
    - Endangered species
  - Aesthetics
  - Cultural resources

- **OSE**
  - Urban and community impacts
  - Life, health, safety
  - Environmental Justice

Detroit – Lake Michigan

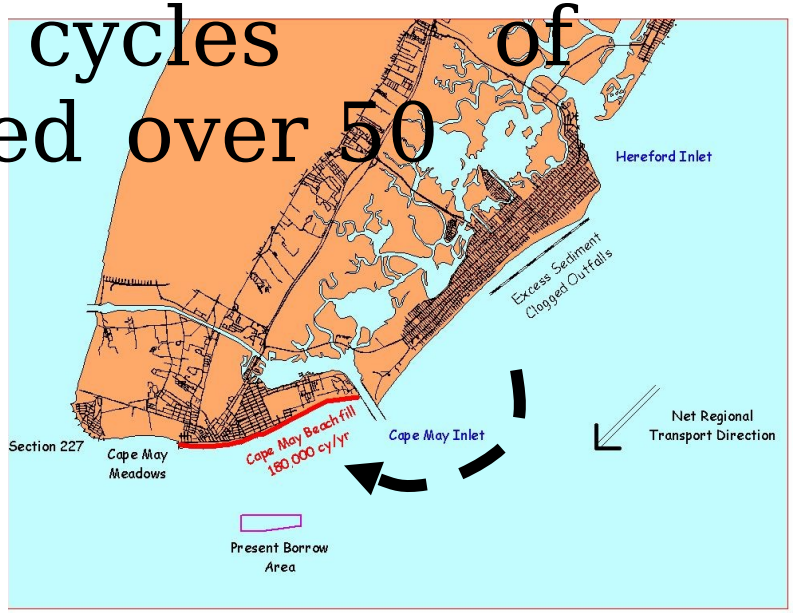
- Switch from trucking to placing accreted material in littoral zone – costs nearly equal, but almost twice as much sand moved ($4.8 M)
- Harbor dredging costs reduced ($330 K)
- Downdrift erosion (land, roads) reduced by half (value estimated at $1.3 M)

- Note: 10 year period for figures shown



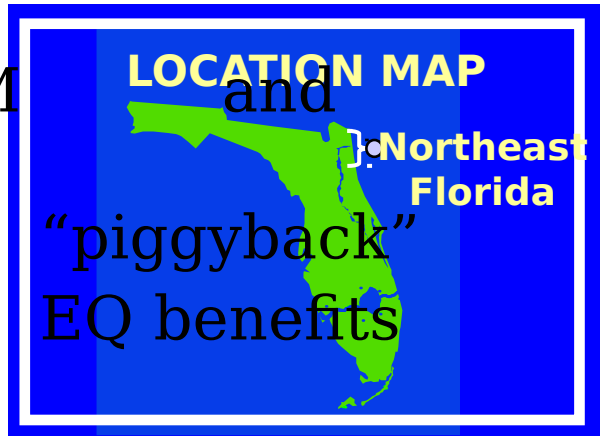
Philadelphia – Cape May

- Bypassing may reduce/eliminate need for beach renourishment
- Reduce/eliminate need for dredging
- Cost savings: $220 K ANNUALLY for 50 year period; 12 cycles of nourishment eliminated over 50 years



Jacksonville

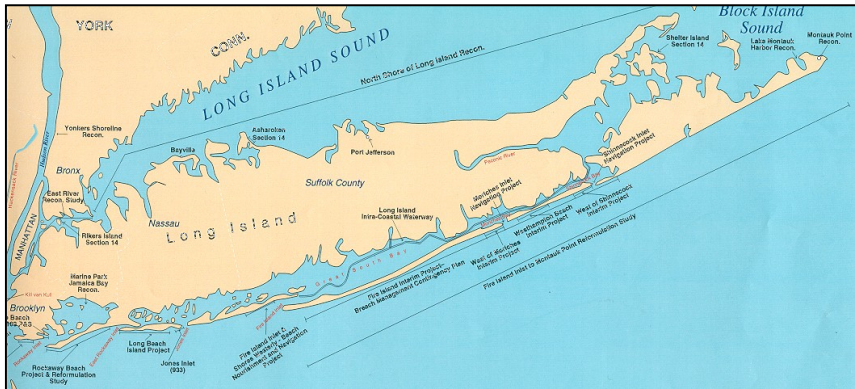
- Jacksonville Harbor Navigation Project – establish deposition basin to reduce channel shoaling and nourish Duval County Shore Protection Project
  - Most recent effort could have saved $7 M due to price differential
  - Future efforts (6-8 year period) with more material, lower cost differential, similar savings potential
- South Amelia Island – beach placement from maintenance of AIWW
  - 250,000 cy Federally funded O & M and 80,000 cy State funded
  - Dredge efficiencies – mob/demob “piggyback”
  - Save freshwater lake in State Park EQ benefits



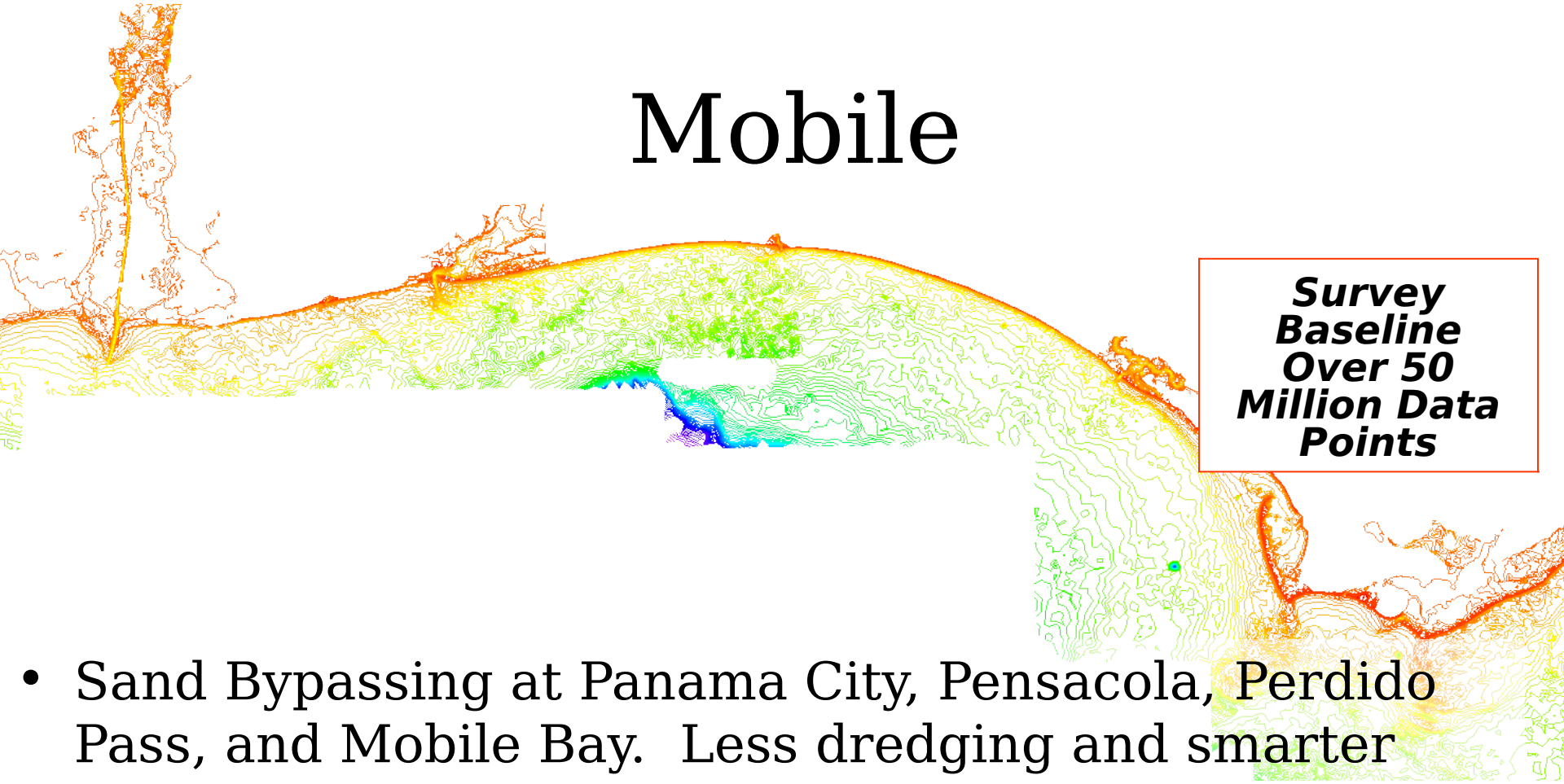
New York

- Using dredged material to mimic overwash sediment dynamics for improving shorebird habitat (Piping Plover, least tern, others) (5-10 acres) – plus reduced disposal costs

- Sea Bright - Small scale backpassing to reduce beach nourishment frequency - eliminate one $20-30 M cycle over 50 years



Mobile



- Sand Bypassing at Panama City, Pensacola, Perdido Pass, and Mobile Bay. Less dredging and smarter management. Anticipated cost savings:
- River Sand – Apalachicola, Black/Tom – river dredging of high quality material that could be used beneficially on coast, rather than incurring expense at upland disposal sites

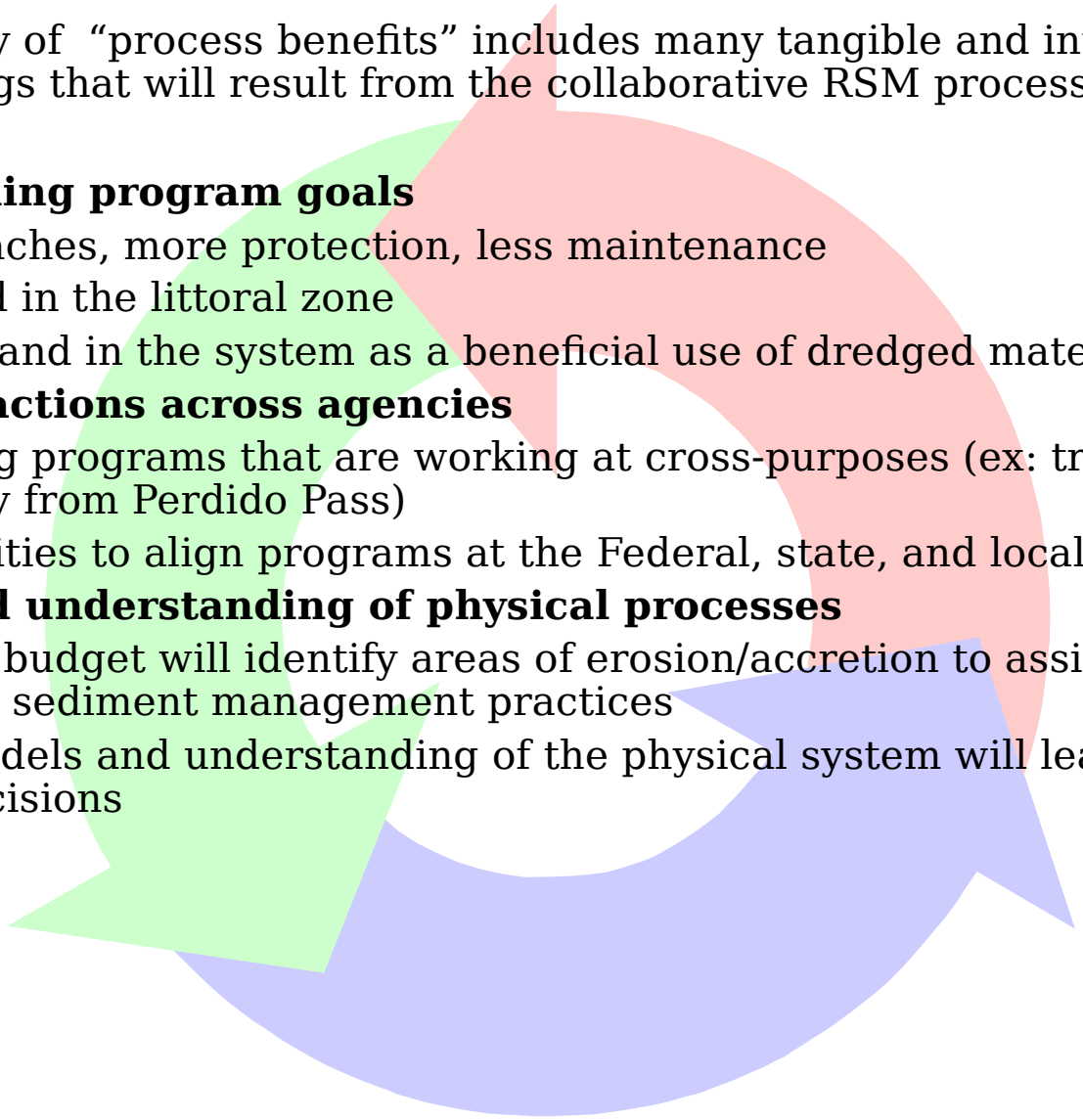
South Pacific Division

- **Main issue is sediment trapped behind dams – many sites being considered for RSM**
- **Sediment trapped upstream starves beaches along the coast**
- **Sediment trapped behind dams reduces their effectiveness and value for their intended purposes**
- **RSM activities are part of a strong partnership with state of California and other agencies**

“Process Benefits” of RSM

The category of “process benefits” includes many tangible and intangible good things that will result from the collaborative RSM process:

- **Overarching program goals**
  - Wider beaches, more protection, less maintenance
  - Keep sand in the littoral zone
  - Keeping sand in the system as a beneficial use of dredged material
- **Aligned actions across agencies**
  - Identifying programs that are working at cross-purposes (ex: trucking sand away from Perdido Pass)
  - Opportunities to align programs at the Federal, state, and local levels
- **Improved understanding of physical processes**
  - Sediment budget will identify areas of erosion/accretion to assist in modifying sediment management practices
  - Better models and understanding of the physical system will lead to better decisions



RSM "Process Benefits" (cont)

- **Business process efficiency**
  - Baseline data to make future Feasibility studies faster and cheaper
  - Building a common database for all agencies to use
  - Solving datum problems, which are currently costly to fix, but more costly to ignore if errors lead to bad or inefficient decisions
- **Stakeholder collaboration**
  - Improved communication between Federal, state, and local governments (and presumably non-governmental organizations too)
  - RSM is a catalyst for managing the coastal resources
  - Eglin Air Force Base has joined as a participant in the East Pass management plan
  - Understanding where the various states are in terms of coastal management and policies (ex: Florida advanced, Alabama less so)
- **Preparedness**
  - Identifying future problem areas, and acting now (expected concentrations in population growth, related development, recreation)
  - Identification of where data collection is needed

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